

## Claims

What is claimed is:

1. A sequential processing reaction vessel comprising:

5           a pressure resistant outer housing formed from a microwave transparent material, said housing being able to withstand at least 150 psi of internal pressure;

          a chemically inert inner housing formed from a microwave transparent material, said housing positioned within a cavity formed by said outer housing, said inner housing being resistant to reaction with corrosive liquids at temperatures up to 150° C and pressures up to  
10   150 psi;

          a chemically inert membrane filter positioned within said inner housing, said filter arranged in an essentially horizontal orientation to accommodate placement of a solid sample material, said filter having a pore size which is smaller than the typical partical size of said solid material for retention of said samples, said d filter permitting passage of said  
15   corrosive liquids;

          a chemically inert, microwave transparent top valve, said valve permitting introduction if said corrosive liquids to a reactor volume formed by said inner housing; and

          a chemically innert, microwave transparent bottom valve, said valve permitting removal of said corrosive liquids after reactive contact with said solid sample.

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